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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/994,188	11/26/2001	Nasreen Gazala Chopra	10010188-1	8737

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AGILENT TECHNOLOGIES, INC  
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EXAMINER	
KIKNADZE, IRAKLI	
ART UNIT	PAPER NUMBER

DATE MAILED: 11/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/994,188

Applicant(s)

CHOPRA ET AL.

Examiner

Irakli Kiknadze

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 2-8 and 13-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-8 and 13-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11/26/2001 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

### **DETAILED ACTION**

1. In response to the Office action dated June 14, 2004 the amendment has been received September 17, 2004.

Claims 2,6,13,14 and 21 have been amended.

Claims 2-8 and 13-32 are currently pending in this application.

### ***Response to Arguments***

2. Applicant's arguments with respect to claims 2-8 and 13-32 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 2-4, 6, 7, 15-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Siedband (US Patent 5,308,988).

With respect to claims 2 and 6, Siedband teaches an X-ray imaging system comprising: a gas detector (14) configured to retain a volume of gas, the gas detector having a first detection circuit corresponding to a first region of the gas and a second detection circuit corresponding to a second region of the gas (Figs. 1 and 2), the first

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detection circuit (as square anode (22)) being adapted to provide a first signal indicative of an intensity of a first portion of x-rays radiating into the first region of the gas, the second detection circuit (any another anode (22)) being adapted to provide a second signal indicative of an intensity of a second portion of x-rays concurrently radiating into the second region of the gas, the first portion of x-rays being different than the second portion of x-rays, wherein the gas detector (14) includes a substrate (32); and a chamber supported by substrate, the wherein the volume of gas is retained within the chamber. Further, With respect to claim each anode (22) defines a sell of a single, independent ionization chamber (column 2; lines 10-24 and column 3; lines 16-29).

With respect to claim 3, Siedband teaches that the chamber engages the substrate (32) and the first detection circuit and the second detection circuit are arranged between the chamber and the substrate (Fig.2; column 3; lines 50-63).

With respect to claim 4, Siedband teaches that the gas detector (14) includes an electrode (as a common cathode (18)), the chamber is arranged between the electrode (18) and the substrate (32), and the electrode is adapted to apply a potential difference across the gas arranged in the chamber (Fig.2; column 3; lines 20-35).

With respect to claim 7, Siedband teaches that chambers pneumatically communicate with each other (Figs. 1 and 2).

With respect to claim 15, Siedband teaches a method for X-ray imaging, the method comprising: providing a volume of gas; defining a first region of the gas and a second region of the gas, the first region of the gas being different than the second region of the gas; generating a first signal indicative of an intensity of a first portion of x-

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rays radiating into the first region of the gas, the first signal corresponding to at least a first pixel (22); and generating a second signal indicative of an intensity of a second portion of x-rays concurrently radiating into the second region of the gas, the second signal corresponding to at least a second pixel (any another anode (22)); wherein the first portion of x-rays is different than the second portion of X-rays (column 2; lines 10-24 and column 3; lines 16-29; Figs. 1 and 3).

With respect to claim 16, Siedband teaches rendering the first pixel based on the first signal; and rendering the second pixel based on the second signal (column 4; lines 32-49; Fig.1).

With respect to claim 17, Siedband teaches the first region of gas is defined by a first chamber and the second region of gas is defined by a second chamber (column 3; lines 24-29).

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 5, 13, 14 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Siedband (US Patent 5,308,988) in view of McDaniel et al. (US Patent 4,780,897).

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8. With respect to claim 5, 13, 14 and 18, Siedband teaches claimed invention except for a first and second gas reservoirs communicating with the chamber. McDaniel teaches an X-ray detector using two different gases (ion sources) at different pressures. Gasses (e.g. Krypton and Xenon) and pressures could optimally be selected to pass higher energy X-rays an/or to allow interact with lower energy X-rays for producing desirable X-ray image (column 12; lines 15-25). It would have been obvious to one ordinary skill in art at the time invention was made to provide the X-ray imaging system of Siedband with teachings of McDaniel, in order to potentially change operating characteristics of the gas detector so that improved signal corresponding to the detected X-rays can be produced.

9. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Siedband (US Patent 5,308,988) in view of Cotic (US Patent 4,276,476).

With respect to claim 8, Siedband teaches claimed invention except for an X-ray stopping component arranged between chambers. Cotic teaches the thin plates (49) preferably made of stiff high atomic number metal having high X-ray absorption. The plates (49) are avoiding permeation of X-radiation from one gas filled cell to another, called "Cross Talk," which degrades spatial resolution of an X-ray gas detector (10) (column 5; lines 17-23). It would have been obvious to one ordinary skill in art at the time invention was made to employ the teachings of Cotic with the X-ray detector of Siedband in order to provide X-ray stopping/absorbing components arranged between the first chamber and second chamber allowing to absorb off-axis photons, thereby increase resolution of the gas detector.

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10. Claims 19 and 20, are rejected under 35 U.S.C. 103(a) as being unpatentable over Siedband (US Patent 5,308,988) in view of Little et al (US Patent 5,119,408).

With respect to claims 19 and 20, Siedband teaches claimed invention except for providing an object and moving the object relative to the volume of the gas while the object is being irradiated. Little teaches a method (Figs. 3A-3B) for inspecting an object (80) moving relative to a Xenon gas detector (column 4; line 79 –column 5; line 16) to obtain dynamic X-ray images corresponding to the object. It would have been obvious to one ordinary skill in art at the time invention was made to employ the teachings of Little with the X-ray detector of Siedband in order to provide dynamic X-ray images corresponding to the object of interest.

11. Claims 21-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Siedband (US Patent 5,308,988) in view of Ashe et al. (US Patent 4,096,389).

With respect to claims 21 and 23, Siedband teaches an imaging system comprising: a gas detector (14) comprising imaging volumes (22) arranged in an array (20), the gas detector containing a gas susceptible to ionization; an ionization detector for providing indications of ionization of the gas for at least some of the imaging volumes (column 2; lines 10-24 and column 3; lines 16-29; Figs. 1 and 3). Siedband is silent about an image generator. Image generating and processing system are well known in art (also conformed by the applicant on page 16, lines 3-9). Ashe teaches (Fig. 1) an X-ray imaging system comprising a gas detector (18) and image generator (20) for converting detectors reading into an image through well-known mathematical

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algorithms, the image through the plane or cross-sectional slice of the patient (16) is reconstructed. The reconstructed image is subsequently read-out or displayed by a display device 22 such as a cathode-ray tube screen, printer, or the like (column 2; lines 40-47). It would have been obvious to one ordinary skill in art at the time invention was made to employ the teachings of Ashe with the X-ray detector of Siedband in order to provide the X-ray images corresponding to the object of interest and display the images for enhanced visualization.

With respect to claim 22, Siedband teaches an X-ray source (10) for ionizing the gas within the imaging volumes as a function of characteristics of an object being imaged (Fig.1; column 3, lines 16-29).

With respect to claim 24, Siedband teaches that at least some of the imaging volumes are separated from others of the imaging volumes (column 3; lines 24-29).

With respect to claim 25, Siedband teaches the imaging volumes are defined by chambers, each of said chambers being spaced from adjacent ones of the chambers (column 3; lines 24-29).

With respect to claim 26, Siedband teaches that gas passages formed between at least some of said chambers, said gas passages enabling adjacent ones of said chambers to communicate pneumatically (Figs.1 and 2).

12. Claims 27-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Siedband (US Patent 5,308,988) in view of Feige et al. (US Patent 6,204,507) B1 and further in view of Ashe et al. (US Patent 4,096,389).



With respect to claim 27-29 and 31, Siedband teaches an X-ray imaging method comprising providing a gas detector (14) comprising imaging volumes arranged in an array but silent about an array of gas volumes and converting the ionization detected into an image. Feige teaches a gas-filled ionization detector (1). The various regions of gas retained by the gas detector (1) are defined by separate chambers (3) are creating single line or an array of gas volumes. Further method comprises detecting ionization at respective gas volumes in the array of gas volumes (claim 17; Fig.8). In this configuration, the gas retained by the chambers can be conventionally changed allowing changes the operating characteristics of the gas detector. It would have been obvious to one ordinary skill in art at the time invention was made to employ the teachings of Feige with the X-ray detector of Siedband in order to provide the imaging volumes arranged in an array with the individual chambers forming the array of gas volumes because it would allow, potentially, selective changes in the operating characteristic of the gas detector so that an improved signal corresponding to the detected X-rays can be produced. Further, Ashe teaches image generating and processing system. It would have been obvious to one ordinary skill in art at the time invention was made to employ the teachings of Ashe with the X-ray detector of Siedband in view Feige in order to provide the X-ray images corresponding to the object of interest and display the images for enhanced visualization.

With respect to claim 30, it would have been obvious to one of ordinary skill in art at the time the invention was made to move the object relative to the gas volumes

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associated with the X-ray detector in order to provide dynamic X-ray images corresponding to the object of interest.

With respect to claim 32, Siedband teaches the array of gas volumes is provided upon a substrate (32)(Fig.2).

### **Conclusion**


13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Irakli Kiknadze whose telephone number is 571-272-2493. The examiner can normally be reached on 9:00- 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on 571-272-2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Irakli Kiknadze  
October 19, 2004

IK

  
DAVID V. BRUCE  
PRIMARY EXAMINER